Discovery consists of seeing what everybody has seen and thinking what nobody has thought.
Albert Szent-Györgyi (1893–1986)

LEGISLATION

California Enacts Safe Cosmetics Act

Californians frustrated with what they consider the FDA's loose control over cosmetic safety have taken matters into their own hands with the country's first state cosmetics regulatory act, which takes effect in January 2007. The California Safe Cosmetics Act of 2005 will require manufacturers to report the use of potentially hazardous ingredients to the state Department of Health Services (DHS), which in turn will alert consumers. The DHS has the authority to investigate whether the product could be toxic under normal use and to require that manufacturers submit health effects data. Manufacturers that continue marketing products deemed unsafe in California could face legal action.

A safer smooch. California recently enacted legislation that will require manufacturers to report potentially hazardous ingredients used in cosmetic and personal care products.

"The legislation's sponsors believe that the basis of the law is the public's right to know," says Kevin Reilly, DHS deputy director of prevention services. The new law uses the list of toxicants drawn up under California's Proposition 65, which mandates that the governor publish a list, updated at least yearly, of chemicals that are known to the state of California to cause cancer, birth defects, or other reproductive harm.

Although the new act applies only in California, its effects are likely to reverberate nationwide. Consumer advocates predict that manufacturers seeking to avoid negative publicity will remove, rather than report, suspect ingredients. Those formulas would then be marketed coast to coast.

Impetus for the law stems from consumers' concerns over long-term exposure to certain cosmetic ingredients. Cosmetic use has not been linked to chronic illnesses, but some products do contain carcinogens (such as formaldehyde, used in nail treatments), teratogens (such as lead acetate, used in two hair dyes), and other reproductive toxicants (such as di-*n*-butyl phthalate, used in nail treatments and dandruff shampoos).

Studies in recent years have shown that humans absorb and inhale sometimes surprisingly high levels of toiletry ingredients. In the November 2005 issue of *EHP*, a team led by Susan M. Duty of the Harvard School of Public Health demonstrated that urine concentrations of phthalate metabolites increased by 33% with each personal care product—hair gel or spray, lotion, deodorant, cologne, aftershave—that subjects used.

Historically, cosmetics safety has been in the hands of manufacturers; the FDA requires no premarket testing. Each year, an expert panel convened by the industry-funded Cosmetic Ingredient Review (CIR) identifies priority ingredients for which it conducts literature reviews and analyses to determine safety. The panel—made up of independent academic researchers and representatives from industry, consumer interests, and the FDA—has declared 9 of the 1,286 ingredients reviewed since 1976 unsafe for normal cosmetic use. But manufacturers are not obligated to eliminate any ingredients—at least one ingredient identified as unsafe by CIR, hydroxyanisole, is still used.

Safety advocates see evidence of any harm in any use as reason enough for a ban. "Ingredients suspected of causing cancer shouldn't be used in cosmetics," says spokesman Kevin Donegan of the Breast Cancer Fund, a San Francisco–based nonprofit that promoted the California bill.

F. Alan Andersen, director and scientific coordinator of CIR, counters that the dose creates the danger. "We don't subscribe to the notion that if there's ever an adverse effect, [a chemical] must not be in a product people use," he says. "It doesn't make sense to us to apply the precautionary principle. Instead, we use a risk assessment approach, and the wide margins of safety that we have found for chemicals such as phthalates using this approach assure us that actual use of cosmetics is safe."

The law drew fierce opposition from individual companies and the Cosmetic, Toiletry, and Fragrance Association (CTFA) as it worked its way through the California legislature. "CTFA supports strong federal regulation by the FDA," says Kathleen Dezio, executive vice president of public affairs and communications for the association. "For this reason, CTFA has generally opposed state-specific legislation that would undermine this national approach and lead to an unworkable state-by-state patchwork of rules . . . or unjustified, extreme requirements that are well beyond those placed on any other category of food, beverages, drugs, or consumer products." She adds that CTFA has met with the DHS and "pledged our cooperation in accomplishing the requirements" of the law.

Some manufacturers have already ceded to public pleas for safer products. In the past two years, almost 350 of them signed a pledge promoted by the Campaign for Safe Cosmetics, a coalition of health and environmental groups, to use no chemicals linked to cancer or birth defects. Industry leaders L'Oréal and Revlon broke new ground last year when they promised that products they sold in the United States would meet more stringent European Union standards. In 2004 Europe enacted a ban on suspected carcinogens, mutagens, and reproductive toxicants in personal care products.

"We're definitely seeing a shift in the attitude of manufacturers," Donegan says. "They're starting to see the benefits of removing anything that could cause cancer." **–Cynthia Washam**

Radu Razvan/ShutterStock

Radiation

Tanning Trippers Get UV High

It has long been suspected that cutaneous endorphins are produced during exposure to UV light. Now research published in the April 2006 issue of the *Journal of the American Academy of Dermatology* suggests that frequent users of tanning beds may become addicted to these endorphins. Moreover, blocking the effects of the endorphins could lead to withdrawal symptoms.

"This might explain why some people appear to be hooked on sunbathing and why frequent users of tanning beds say they experience a positive mood change or are more relaxed after a session," says coauthor Steven Feldman, a professor of dermatology at Wake Forest University School of Medicine.

Feldman's team thought that blocking this endorphin rush might cause such people to lose some of their tanning enthusiasm; what they didn't expect was for some to develop withdrawal symptoms.

The subjects included eight frequent tanners (who used tanning beds 8 to 15 times per month) and eight infrequent tanners (who used them up to 12 times per year). The researchers administered either a placebo or 5, 15, or 25 mg of naltrexone, a central and peripheral opioid receptor blocker; this blockage causes withdrawal symptoms in opioid drug–addicted people but not in nonaddicted people. The subjects were then asked to lie for 10 minutes on each of two tanning beds, one a true UV bed, the other rigged not to deliver UV light. Afterwards, the subjects, who were blind to the test conditions, were asked to describe which session made them feel best.

With the placebo and the 5-mg naltrexone dose, the frequent tanners showed a clear preference for the UV bed—and more strongly so than the infrequent tanners. But this preference fell away with the 15- and 25-mg doses of naltrexone, "suggesting that light-induced endorphins are reinforcing [frequent tanners'] behavior," says report coauthor Mandeep Kaur, also a dermatology professor at Wake Forest University School of Medicine.

Further evidence of this was seen when half of the frequent tanners developed nausea and jitteriness with the 15-mg dose. "These are common [opioid drug] withdrawal symptoms," explains Feldman, "and they were bad enough for two subjects to drop out." Although there were no further problems at the 25-mg dose, Feldman says these results suggest that frequent tanners suffer some degree of dependency on endorphins.

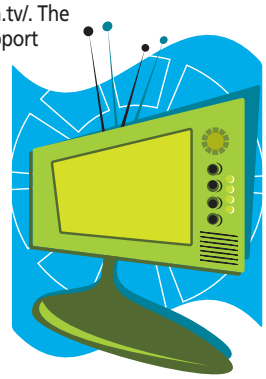
"Clearly tanning is not as addictive as smoking," remarks Robert Dellavalle, an associate professor of dermatology at the University of Colorado Health Sciences Center. "Just look at the prevalence of smoking in middle age—twenty percent in the UK and the United States. In contrast, there is a steep drop-off in the prevalence of tanning as people age."

Still, says, Feldman, although it's not time for the Drug Enforcement Administration to raid beauty parlors, "these results do raise questions about the safe use of tanning beds." **–Adrian Burton**

Sun-sations. A new study shows why tanning bed rays feels so good to some people: UV light produces endorphins to which frequent tanners may become addicted.

Clockwise from left: Dragan Trifunovic/ShutterStock; Kelly Resener/ShutterStock; Joseph/ShutterStock

Now Broadcasting: green.tv



green.tv, the world's first Internet-based broadband channel dedicated to environmental issues, started broadcasting in March 2006 from its website at http://www.green.tv/. The channel, developed with support from UNEP, is also available as a podcast on iTunes. green.tv will carry films from around the world, produced by NGOs, community film makers, public sector agencies, and environmentally minded corporations. The site features seven subchannels focused on air, land, water, climate change, people, species, and technologies. Each subchannel will run a feature film, a news item, and a story for children. The channel's first offerings include films from Water Aid, the Sierra Club, the Eden Project, the Women's Environment Network, Farm Africa, and others.

UNEP Promotes Sustainable Building and Construction

In February 2006 UNEP announced the launch of the Sustainable Building and Construction Initiative to promote environmentally friendly practices in the construction industry. Three of the world's largest construction companies—Lafarge, Skanska, and Arcelor—have signed on to the effort. The construction sector employs over 100 million people worldwide and contributes 10% of the global gross domestic product. Yet the industry also plays a serious role in problems such as climate change, waste generation, and depletion of natural resources. The new initiative will address these issues, and also lobby for laws and building standards to support sustainable practices.

Pediatric Environmental Health in Argentina

WHO statistics show that approximately 33% of diseases affecting children under age 5 are linked to environmental risk factors. To address this threat, the Argentine and Buenos Aires governments have set up new "pediatric environmental health units" in Buenos Aires and several provinces of Argentina. The units are made up of pediatricians, nurses, social workers, teachers, and others who work as a team to uncover and remediate risk factors in children's environments, often at the request of a referring physician. The units have the authority to work with schools, public works, and neighborhood residents if they believe a specific hazard exists. The units will also train other professionals within the hospitals where they are based and conduct research on child environmental health issues.

WOMEN'S HEALTH

Endometriosis and PCB Exposure

Endometriosis may be related to exposure to persistent pollutants such as polychlorinated biphenyls (PCBs), according to research published in the May 2006 issue of *Chemosphere*. This gynecological disorder linked to infertility afflicts 10% of U.S. women of reproductive age. Researchers measured blood PCB levels in women undergoing laparoscopy for suspected endometriosis or other gynecological conditions. Higher levels of PCBs were detected in women with histologically confirmed endometriosis compared with controls.

Toxicologist Elena De Felip of the Istituto Superiore di Sanità in Rome and her colleagues measured 11 PCB congeners that are most abundant in human tissue. In 80 women aged 20 to 40, the sum of all congeners was 1.6 times higher in the 40 women diagnosed with endometriosis than in controls. Three congeners, PCBs 138, 153, and 180, were particularly higher in women with endometriosis. These three congeners have been reported to have estrogenic activity and to interfere with hormone-regulated processes.

PCBs have been used since the 1930s, mainly in electrical equipment. Although no longer manufactured, these persistent chemicals accumulate in the food chain; today meat, fish, eggs, and milk are chief sources of PCBs. But diet seems unable to explain the difference in PCB levels detected in the two groups of women, since "the dietary habits of the women were basically the same," says De Felip.

De Felip suspects that differences in how women detoxify and eliminate PCBs from the body may explain the disparity. These processes are mediated by polymorphic enzymes; therefore, she says, differences in toxicokinetic activity may represent the basis for the higher concentrations detected in women with endometriosis and may also be related to higher or lower susceptibility to that condition.

Studies of PCBs and endometriosis face several limitations. Researchers typically measure only a few widespread congeners that are selected because of their toxicological activities, including an association with cancer shown in animal models. "So we're only getting part of the picture," says Germaine Buck Louis, chief of the Epidemiology Branch at the National Institute of Child Health and Human Development.

In a study described in the January 2005 issue of *Human Reproduction*, Buck's team measured 62 congeners in 84 women undergoing laparoscopy. Levels of 4 antiestrogenic congeners were 3.77 times higher in women diagnosed with endometriosis than in controls. "We don't fully understand the role of estrogenic and antiestrogenic PCBs," she says, but complex interactions of many PCBs as well as other chemicals may be involved in developing endometriosis.

Recent advances in PCB detection methods allow more congeners to be measured at lower concentrations. "Women with endometriosis may have low levels of a particular congener not found in [other women]," says Louis. Moreover, breastfeeding reduces PCB levels in women, so women without endometriosis may have lower blood levels because they become pregnant and breastfeed more often. "There's no ideal comparison group for endometriosis studies," says Louis, and "there are no easy answers." **–Carol Potera**

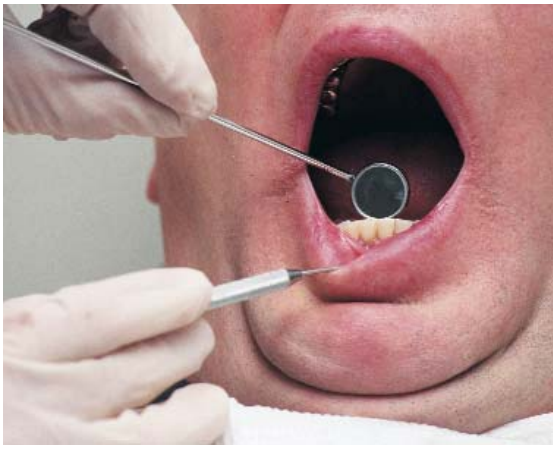
CHEMICAL EXPOSURES

No Dental Dilemma for BPA

Among the many uses of bisphenol A (BPA) is the manufacture of resin-based dental composites and sealants. Recently a team of researchers from the CDC sank their teeth into questions about whether BPA monomer leaching from sealants could be harmful to people. The results of their human study, presented in the March 2006 issue of the *Journal of the American Dental Association*, suggest that although leaching does occur, sealants are still a safe means of preventing dental cavities.

Low-level exposures to BPA monomer in pregnant rodents, at a level that humans could potentially receive from dental sealants, have been shown to disrupt reproductive development in their fetuses, and concerns have emerged about the possibility of human health effects from dental exposures. Scientific exploration of this question has yielded inconsistent results, says Renée Joskow, first author of the March paper. Much of this is due to limitations in laboratory detection and translation of animal studies to human health effects, as well as insufficiently addressing the parameters of exposure in a clinical dental setting.

The CDC team, led by Joskow (now of the U.S. Public Health Service) and Dana Barr, looked at 14 nonsmokers receiving their first resin-based sealants as part of their routine dental care. Each subject received one of two brands of dental sealant manufactured by two well-established dental equipment and material supply firms. Then their saliva and urine were tested for BPA.



BPAhhh. New data show that exposure to bisphenol A in dental sealants is likely an insignificant source of risk.

Getty Images

All the patients had BPA in their saliva and urine, even before treatment. For patients receiving Helioseal F sealants, saliva BPA doubled immediately after treatment and returned to baseline within 1 hour. Urine BPA more than tripled 1 hour after treatment and returned to baseline within 24 hours. For patients receiving Delton LC sealants, saliva BPA increased nearly 126 times immediately after application and was still 23 times higher after 1 hour. Urine BPA jumped 10 times 1 hour after treatment and was still elevated 24 hours later. Both levels eventually returned to baseline.

Barr believes the patients' baseline BPA came from background exposures from environmental sources such as water and food packaging. These, she suggests, could be "a more chronic low-level source of exposure" than dental sealants. Barr adds that in her view, although point-source exposure from dental sealants might approach levels that induce health effects in rodents, "[it] is not the most significant source of exposure in humans." Moreover, she holds that exposure to BPA from dental sealants, already variable and short-lived in the body, could be easily reduced further by having the patient spit frequently in the hours after application. **–Julian Josephson**

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Cure Autism Now

In 1995, parents of children with autism joined together to form the nonprofit organization Cure Autism Now (CAN). Since then, its membership has grown to include clinicians and scientists committed to accelerating the pace of biomedical research in autism. CAN raises and distributes funds for research on the causes, prevention, and treatment of autism, as well as education and outreach. As a resource for everyone interested its work, CAN has a website located at http://www.cureautismnow.org/.

So far, CAN has committed over $25 million to research funding and has established and continues to support the Autism Genetic Resource Exchange (AGRE). Clicking on the Research link at the top of the CAN homepage takes visitors to an overview of the CAN science program, which includes six initiatives that the group believes will yield the most effective treatment for individuals with autism.

The Genomics Initiative focuses on gene mapping and microarray work. CAN's goal is to identify several genes involved in autism within the next three years. Closely related to the Genomics Initiative is the AGRE, an open gene bank with a large collection of immortalized cell lines and DNA samples gathered from families with more than one autistic child. Available on the AGRE page is a link to research updates published since 2001.

The goal of the Innovative Technology for Autism Initiative is to stimulate development of products that provide realistic solutions to the issues encountered by those with autism, their families, educators, health care specialists, and researchers. The initiative offers multiyear grants, fast-track "bridge" grants, and educational programs. It also sponsors a workgroup within which investigators can meet, share, and collaborate, and which also serves to actively bring new investigators into the field.

One major hurdle that autism researchers are working to overcome is the lack of any biomarker for diagnosis. The CAN Biomarkers Initiative has yielded two preliminary findings of possible autism biomarkers—one a novel protein in the urine of children with autism and some of their unaffected relatives, and the other a distinct lipid profile that was seen in 20 AGRE samples. CAN has launched a study in an effort to replicate and confirm these results.

In the past few years, new findings on neuroplasticity, the ability of the brain to grow and change throughout life, have led to significant breakthroughs in the treatment of stroke and dyslexia through a process called neural retraining. To apply these same ideas to the treatment of autism, CAN has established the Neural Retraining Initiative. The initiative's first project, led by Michael Merzenich of the University of California, San Francisco, is working to design, produce, and test nonpharmaceutical tools and techniques, including one to prevent the emergence of full-blown autism in at-risk infants.

CAN has also awarded several grants through its Environmental Factors in Autism initiative to study the neurotoxicity of mercury and how it may factor in the development of autism. Thimerosal, which contains ethylmercury, has been widely used as a preservative in vaccines and other health and medical products, and has been raised as a potential contributor to autism. **–Erin E. Dooley**

Unlimited Mileage from the Drive-Thru?

A company offering rental cars powered entirely by biodiesel opened its doors in Los Angeles in February 2006. The cars get 400 to 800 miles per tank on 100% biodiesel made from recycled cooking oil. Bio-Beetle Eco Rental Cars first started in Hawaii in 2003 with a single car, and now offers 16 at that location, while the LA location is starting with 4 vehicles. Company founder Shaun Stenshol hopes to open two more U.S. locations by the end of the year. Other biodiesel rentals may not be far behind: Enterprise is pilot-testing an offering of biodiesel Jeeps in Portland, Oregon.

Goldman Environmental Prize 2006

For 17 years, the $125,000 Goldman Environmental Prize has been awarded to activists dedicated to effecting environmental change in their home countries. The six winners for 2006 are:

- Yu Xiaogang, of China, who created groundbreaking watershed management programs while documenting the socioeconomic impact of dams on Chinese communities. China's central government now considers social impact assessments for major dam developments.
- Anne Kajir, of Papua New Guinea, who uncovered government corruption that allowed rampant illegal logging of the region's largest remaining intact parcel of tropical rain forest. As a novice lawyer, she successfully defended a Supreme Court appeal forcing the logging industry to pay damages to indigenous land owners.
- Tarcísio Feitosa da Silva, of Brazil, who led efforts to create the world's largest area of protected tropical forest regions in a remote area of northern Brazil that was threatened by illegal logging.
- Craig E. Williams, of Kentucky, who convinced the Pentagon to halt plans for burning old chemical weapons that had been stockpiled around the United States.
- Olya Melen, of Ukraine, who used the legal system to temporarily halt the construction of a massive canal through the rich wetlands of the Danube Delta.
- Silas Kpanan'Ayoung Siakor, of Liberia, who revealed evidence that former Liberian president Charles Taylor used profits from unchecked logging to pay for a 14-year civil war. The revelation led the UN Security Council to ban the export of Liberian timber, part of wider ongoing trade sanctions.

Top to bottom: Cure Autism Now; Goldman Environmental Prize